

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 September 2000 (28.09.2000)

PCT

(10) International Publication Number
WO 00/57150 A1

(51) International Patent Classification⁷: **G01L 3/10**

(21) International Application Number: **PCT/GB00/01103**

(22) International Filing Date: **23 March 2000 (23.03.2000)**

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:
9906735.7 **23 March 1999 (23.03.1999)** **GB**

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(81) Designated States (national): **AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.**

(84) Designated States (regional): **ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).**

Published:

— With international search report.

(48) Date of publication of this corrected version:

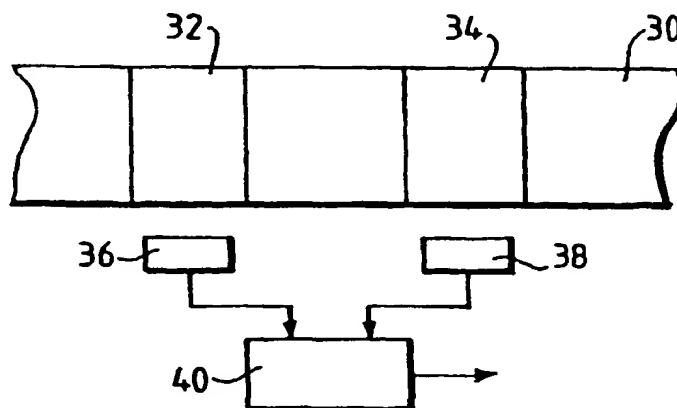
5 April 2001

(15) Information about Correction:

see PCT Gazette No. 14/2001 of 5 April 2001, Section II

[Continued on next page]

(54) Title: **MAGNETISED TORQUE TRANSDUCER ELEMENTS**



(57) Abstract: The problem of magnetoelastic circumferentially-magnetised torque transducers having a zero output magnetic field at zero torque is solved by pre-torquing. This entails circumferentially magnetising the transducer element at a predetermined torque. The technique is advantageously applied to a pair of transducer elements (32, 34; 62, 64) whose outputs are combined (Fig. 6a: 76) to provide a range of measurement of torque (clockwise and counterclockwise) including zero torque. Various combinations of direction of pre-torque and direction of circumferential-magnetisation are discussed. A circuit (Fig. 8) is disclosed for combining the signals to obtain a reference level (84) for gain control of the combined output signals V_o from the two transducer elements (60, 62). Also disclosed is the application of the invention to other forms of torque transducer element in which a magnetic field is stored. One form is longitudinal magnetisation (Fig. 10a). Another is radially spaced magnetisation (Fig. 12a: Fig. 13).

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